



THE HIGHLAND GEOLOGICAL SOCIETY

Scottish Charity No. SC004427

JUNE 2019

Dear Members,

Welcome to our summer and autumn newsletter detailing our remaining summer excursions, lectures of the winter season and a brief description of our field trips so far this year.

2019

16th June – *Building stones of Inverness*, Andy Moffat and Dave Longstaff, HGS

21st July – *Glen Feshie*, David Jarman, HGS

25th August – *Kintail and Rattigan*, Andy Moffat and Dave Longstaff, HGS

22nd September – *Strathpeffer*, Prof. John Parnell, University of Aberdeen

9th October – *Adventures in the beauty of rocks*, Prof. Gordon Walkden

6th November – *An introduction to the glaciation of the Inverness area*, Jon Merritt, BGS

11th December – *Giant zircon crystals from the Scottish Lewisian: new insights from old rocks*, Dr John Faithfull, Hunterian Museum, University of Glasgow

2020

15th Jan – *Scottish hydro power: Excavations in rock. The role of the Engineering Geologist*, Chris Ravey

19th Feb - AGM followed by *New research into the Elgin Reptiles*, Dave Longstaff, HGS

March (tbc) - *Ross of Mull granite*, Dr Adam Zanewski, University College, Cork

REMAINING SUMMER PROGRAMME 2019

Sunday 16th June, *Building Stones of Inverness*, Andy Moffat and Dave Longstaff, HGS

*Meet at 1000 am outside the Central Library, Inverness – * **BOOKING ESSENTIAL***

Following a 1996 HGS tour of the Inverness Building stones led by Sinclair Ross we have updated his notes and will lead another tour to see the varied and interesting rock types used in Inverness. We envisage a circular tour lasting 2-3 hours followed by optional lunch at Weatherspoons in Church St.

email: [Andy Moffat to book and for more information \(andymoffat_rocks@hotmail.com\)](mailto:andymoffat_rocks@hotmail.com)

Sunday 21st July, *Glen Feshie*, David Jarman, HGS

*Meet at 0930 am at the Insh Boathouse Café, Kincaig - * **BOOKING ESSENTIAL***

Join David for an in-depth look at the geology and geomorphology of the upper braided reach and glen head. We will also discuss the landscape origins of the Feshie (Glen, gorge, and upper basin) and environs, and focus on 'why is the finest braided river in Britain here?!'

Approval has been granted for vehicular access to the glen beyond the end of the public road which will save a good deal of walking. It is envisaged that cars will be shared up the private road, but the number of cars, and hence the number of participants, will be limited.

email: David Jarman to book and for more information (david.jarman914@virgin.net)

Sunday 25th August, *Kintail and Rattigan*, Andy Moffat and Dave Longstaff, HGS

This will be a day-trip to look at eclogite in the vicinity of Glenelg and the Moine, Lewisian unconformity on the shoreline. Car parking at Iomairaghradain Farm, NG842201, for the start of the excursion is very limited so we suggest meeting at 1000 am in Glenelg village where we can minimise the number of cars we'll be using. Moine guide :- Page 138, LOC 7.1, 7.1B, 7.1C refer. After lunch we can look at Moine, Lewisian unconformity on the shore north of Glenelg, Moine guide :- Page 125 LOC 6.1.

[http://earthwise.bgs.ac.uk/index.php/Moine_geology_of_East_Glenelg_and Loch Duich, East Glenelg - an excursion](http://earthwise.bgs.ac.uk/index.php/Moine_geology_of_East_Glenelg_and_Loch_Duich,_East_Glenelg_-_an_excursion)

email: Dave Longstaff to book and for more information (Davidandkaren21@btinternet.com)

Sunday 22nd September, *Strathpeffer*, Prof. John Parnell, University of Aberdeen * BOOKING ESSENTIAL

Meet at 1000 am at Museum Coffee shop on the Old Station platform, Strathpeffer.

Bitumen veins were formerly mined as 'coal' from Moinian metamorphic basement at Castle Leod, Strathpeffer, Ross-shire. Biomarker characteristics correlate the bitumen to Lower Devonian non-marine shales separated from the Moinian basement by a major fault. Bitumen veins are particularly orientated E–W, and may be associated with Permo-Carboniferous E–W transfer faults. Bitumen nodules in the Moinian basement, contain thoriferous/uraniferous mineral phases, comparable with bitumen nodules in basement terrains elsewhere. Formation of the nodules represents hydrocarbon penetration of low-permeability basement, consistent with high fluid pressure. This excursion will explore the emplacement of the bitumen and its relationship with the basement rocks.

email: Stephen Young to book and for more information (sstyoung84@gmail.com)

WINTER PROGRAMME 2019 – 2020

Lectures commence at 1930 pm and are held in the Millburn Academy.

9th October – *Adventures in the beauty of rocks*, Prof Gordon Walkden, Professor Emeritus, University of Aberdeen.

Gordon writes: "Mankind has found utility, beauty and significance in rock for millennia. Sadly, over the last century as our understanding of rocks has blossomed, our aesthetic use of them has fallen away.

Marble, granite, slate and limestone, once great utilities and sources of ornamental wonder have lost their magic. Furthermore, scientists often find it necessary to disregard beauty in rock because it defies measurement and could bias impartiality.

Life is short, and retirement liberating. Impartiality is no longer my concern and I can now indulge in the beauty of the medium that has paid my career. This talk pursues the beauty of rock; how fortunes have been made and lost in its pursuit, how it has been used to enhance our world and how understanding rocks can actually add a new layer of beauty to their aesthetic appreciation”.

Note: This is a change from the originally scheduled talk by Alison Tymon.

6th November – *An introduction to the glaciation of the Inverness area*, Jon Merritt, BGS

The coastal lowland flanking the southern shores of the Inner Moray Firth to the east of Inverness contains an excellent record of the retreat of a major tidewater glacier that flowed out of the Great Glen. Together with a flight of raised late-glacial marine shorelines, there is evidence of several glacial oscillations, including the ‘Ardersier Readvance’, which resulted in the tectonic disturbance of sediments. The area includes a diverse assemblage of glaciofluvial and deglacial features, including the Flemington Eskers and transverse moraine ridges. The hinterland contains a wide range of ice-marginal landforms and numerous sections in glacial material formed both during and before the last glaciation. The Middle Findhorn Valley contains a particularly impressive suite of landforms associated with ice-marginal ponding. The district contains a relatively long Pleistocene record, including two well-established interglacial/interstadial sites (Dalcharn and Moy) and the enigmatic rafted deposits of shelly clay and till at Clava, made famous in the 19th Century.

Jon Merritt, presently an Honorary Research Associate of the British Geological Survey in Edinburgh, has studied the Quaternary of the area for over 40 years. He has led numerous field excursions to the area for colleagues and the Quaternary Research Association.

11th December – *Giant zircon crystals from the Scottish Lewisian: new insights from old rocks*, Dr John Faithfull, Hunterian Museum, University of Glasgow

Zircon is the most important mineral used by geologists for dating old rocks. Zircon almost always contains traces of radioactive uranium, and as these parent atoms decay, daughter isotopes of lead accumulate in the zircon, allowing the age of the zircon to be measured. Zircon typically occurs in silica-rich rocks such as granite, forming tiny crystals maybe a tenth to a twentieth of a millimetre long. In some metamorphic complexes, like the Lewisian of NW Scotland, repeated high-grade heating can generate successive generations of zircon growth, which can sometimes be separately dated, but the small size can make analysis and interpretation difficult, especially if rocks have stayed hot for a long time. Nevertheless, zircon accounts for almost all we know about the age of old parts of the Earth’s crust such as the Lewisian.

In the 1960s, mineral collector Gordon Sutherland discovered very large (mm to cm-sized) pinkish zircon crystals in dark ultramafic rocks near Badcall. Ultramafic rocks do not normally contain any zircon so this occurrence was very strange and the geological context remained unexamined and unresolved for many years. However, Andy Moffat, who had known Gordon Sutherland, recently provided key information about these large crystals, allowing the original locality to be properly mapped, and investigated. During this work, similar giant zircons, also in ultramafic rocks, were found in Lewisian rocks in Iona and Harris. These occurrences represent a hitherto-unknown type of occurrence for zircon. We now believe that they are probably common, but have been missed, because people assumed there could not be zircon in such rocks. These occurrences have great potential for getting good isotopic dates in complex metamorphic rocks all around the world, and may also help explain the origins of giant zircons found associated with diamonds, in kimberlites from the Earth’s mantle, shedding light on processes in the deep Earth.

15th January - *Scottish hydro power: Excavations in rock, The role of the Engineering Geologist* : Chris Ravey, Ravey Consulting Ltd.

Renewable energy may be a hot topic at the moment, but it is far from being a new concept. During the 1950's and 60's, large teams of workers and engineers were involved with the design and construction of numerous complex and fascinating hydroelectric engineering schemes. As a result of these schemes, rainwater falling over 10% of the land mass of Scotland can now be used for the generation of electricity. With the recent surge of interest in renewables, including run of the river hydro schemes, this catchment area is only likely to increase.

However, as with any major long-term asset, the safety and lifespan of these schemes is reliant on stringent inspection and maintenance regimes, including over 500km of tunnel and aqueduct, and many large rock faces. Inspections of large rock faces and unlined tunnels through rock are undertaken by engineering geologists experienced in the assessment of rock slope and tunnel stability. If required, the engineering geologist will recommend and design suitable risk reduction measures, and will work closely with a specialist contractor during implementation of any works.

Engineering Geologist Chris Ravey has been working with the SSE hydro engineering team for over 17 years, primarily inspecting unlined rock tunnels and rock faces, and providing practical advice on maintenance issues and remedial works design. In recent years, Chris has worked with smaller renewable energy companies at the planning and construction stages of run of the river hydro schemes. In this lecture, Chris plans to share his experience of work as an Engineering Geologist within the hydroelectric industry by presenting a variety of projects undertaken in some very interesting, very scenic, and sometimes unusual locations.

19th February – AGM followed by *New research into the Elgin Reptiles*, Dave Longstaff, HGS

Currently Dr Davide Foffa and Emily Keeble are working on recently made CT scans of some of the Elgin reptile fossils. Over the next few months Elgin museum should see the results of their research and Dave will describe the new findings.

March (tbc) - *Ross of Mull granite*, Dr Adam Zanewski, University College, Cork (details to follow).

HGS field trips held so far in 2019

Eigg

In April a group of fourteen HGS and AGS members had five very enjoyable days looking at the geology of Eigg while staying at the Glebe Barn (which held a nice selection of Plesiosaur fossils). Dry conditions underfoot, and overhead, meant we could explore the north and south coasts of Eigg with the Sgurr of Eigg being thoroughly explored from all accessible points. The excursion was self-led using the 2016 publication "The geology of Eigg".



Participants at Singing Sands, Eigg



Lunch overlooking north coast of Eigg

Assynt

In early May, Professor Ian Parsons and Dr Mike Simms led us on three gloriously sunny days looking at various sites in Assynt while based at Inchnadamph Lodge. We explored sites ranging from Scourie in the north to Rieff in the southwest of the area including memorable visits to the Carbonatite locality at Loch Urigill and the Ledmore marble quarry.



Group photo near Kylesku Bridge



Ledmore marble quarry

HGS OTHER ITEMS OF INTEREST

The NW Highlands and Lochaber Geoparks are both offering geotours in their respective regions, details can be found from the following links :-

NW Highlands Geopark Geotours

<https://mailchi.mp/e91e700f5ab8/geoutours-2840933?e=22b8c68ac2>

Lochaber Geopark Geotours

<https://mailchi.mp/624866223005/an-update-2885689?e=5b5b2c19c4>

Other Scottish geological societies' field trips can be accessed with these following links:-

Edinburgh Geological Society field trips

<<https://www.edinburghgeolsoc.org/excursions/>>

Glasgow Geological Society field trips

<<https://www.geologyglasgow.org.uk/excursions/>>

Open University geology field trips

<<https://ougs.org/scotland/events/>>

Friends of Hugh Miller: The latest (May) newsletter can be found at :-

[https://s3-eu-west-](https://s3-eu-west-1.amazonaws.com/s3.spanglefish.com/s/27844/documents/newsletters/newslettermay19.pdf)

[1.amazonaws.com/s3.spanglefish.com/s/27844/documents/newsletters/newslettermay19.pdf](https://s3-eu-west-1.amazonaws.com/s3.spanglefish.com/s/27844/documents/newsletters/newslettermay19.pdf).

Of interest to our members the committee of Friends of Hugh Miller have decided, at this year's AGM, to hold an annual Nigel Trewin memorial lecture.

Much further south Steve Etches has compiled a fossil website relating to the Jurassic coast in Dorset :-

The Etches Collection website: <https://www.theetchescollection.org>

Lochaber Geopark are holding a crowdfunding exercise, details can be found at :-

<https://lochabergeopark.org.uk/crowdfunding/>

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